

A NEW SPECIES OF ZANTHOXYLUM (RUTACEAE)
FROM NEW GUINEA *

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SINCE THE PUBLICATION of my revision of the Malesian species of *Zanthoxylum* (1966) and my additional notes (1970), a new species of the genus, collected in eastern New Guinea, has come to my attention. A description of this plant follows.

Specimens were provided for this study by the C.S.I.R.O. Herbarium Australiense, Canberra (CANB) and the herbarium of the Department of Forests, Lae, Papua New Guinea (LAE). Thanks are extended to the curators of those institutions.

Zanthoxylum novoguineense Hartley, sp. nov.

Arbor parva usque 5 m. alta, dioica, sempervirens. Ramuli novelli glabri vel sparse hirtelli. Folia imparipinnata; 34–70 cm. longa; rhachidi glabra vel sparse hirtella, anguste vel late alata (3–11 mm. utrinsecus); foliolis in paribus 2–3(–4), oppositis, sessilibus, chartaceis vel subcoriaceis, pellucido-punctatis, subtus glabris vel sparse hirtellis; foliolis lateralibus anguste vel late ellipticis vel sublanceolatis vel ovatis, 10–34 cm. longis, 5–10 cm. latis, basi acuta vel obtusa vel rotundata, plerumque inaequilatera, venis primariis utrinsecus costa 8–12, margine integra vel interdum parcissime glanduloso-crenata, apice acuminato, acumine 1–3 cm. longo; foliolo terminali oblanceolato, 14–31 cm. longo, 5–12 cm. lato, basi attenuata, aequilatera, venis primariis et margine et apice ut in foliolis lateralibus. Infructescentia terminalis, 4.5–8 cm. longa, paniculata, ramulis patentibus; axe et ramulis glabris vel sparse hirtellis; pedicellis 2.5–4 mm. longis; sepalis persistentibus 4, triangularibus, 0.4–0.9 mm. longis; cicatricibus petalorum delapsorum 4; staminodiis 4. Folliculi subglobosi, 6–9 mm. lati, in pares vel interdum singuli cum carpello abortivo. Flores non visi. HOLOTYPUS: *Pullen 5757* (CANB). FIGURE 1.

DISTRIBUTION. Territory of New Guinea and Papua; lowland and foothill rain forests; sea level to 720 meters. See MAP 1.

Territory of New Guinea. MOROBE DISTRICT: Buso River [about 40 miles S of Lae near the coast], *Foreman LAE 52311* ♀ (CANB, LAE), *Gillison et al. NGF 25690* ♀ (CANB); Kavea Mountain above the Buso River, *Streimann & Foreman*, April 26, 1972 (LAE). Papua. NORTHERN DISTRICT: Managalase area, near Pongani Falls [about 25 miles SE of Popondetta], *Pullen 5757* ♀ (CANB, holotype).

There are some rather minor differences between the material from the

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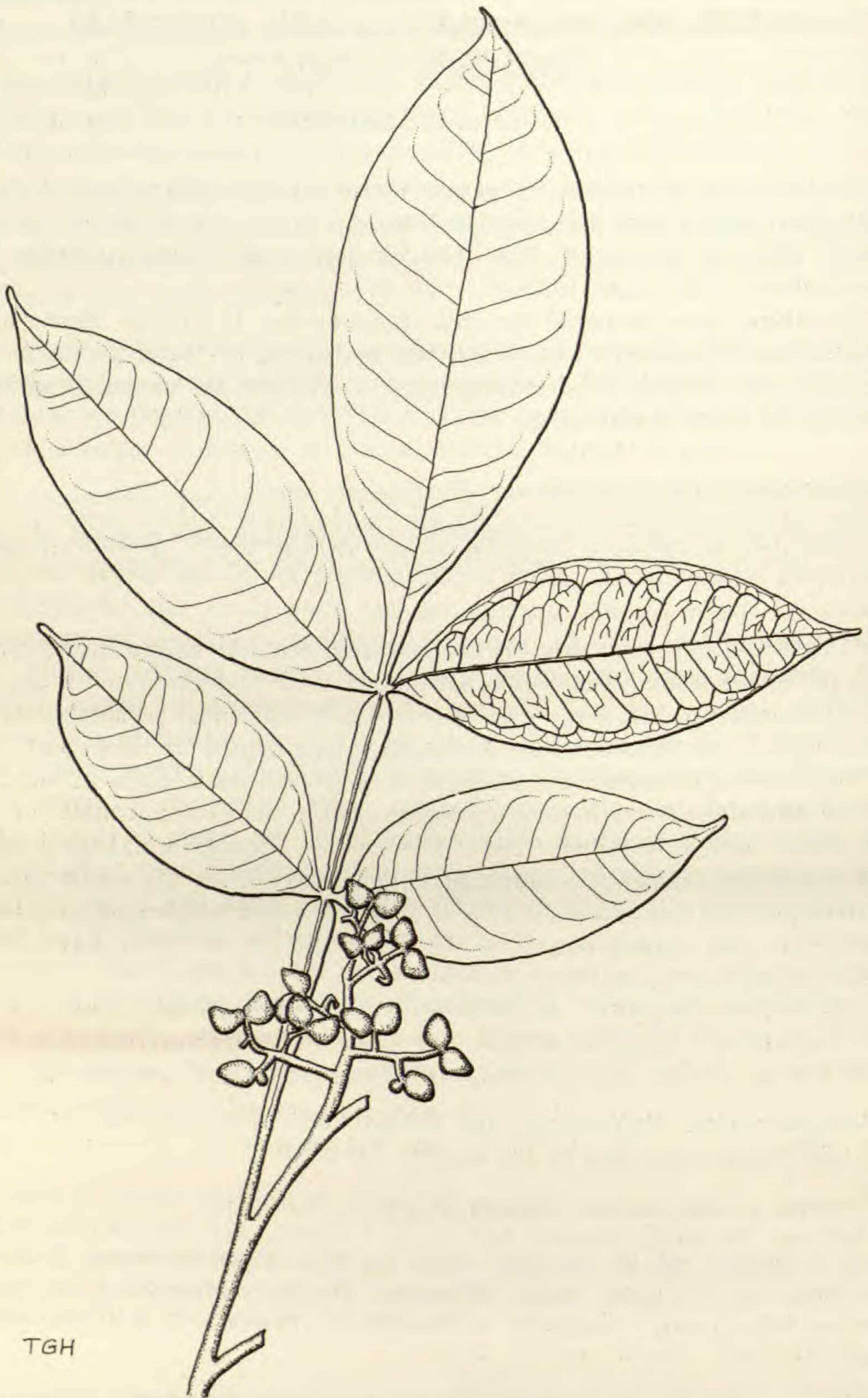


FIGURE 1. *Zanthoxylum novoguineense* Hartley. Fruiting branchlet, $\times \frac{2}{5}$, lower surface of one leaflet shown (drawn from Pullen 5757).

Buso River area and the single collection from Pongani Falls, the former being entirely glabrous, as opposed to sparsely hirtellous, and also having shorter pedicels and smaller sepals. Although the two localities are about 140 miles apart, they are connected by continuous lowland and foothill rain forest, so it seems possible that the two populations overlap and that these variants intergrade. Edaphic factors may have something to do with the differences at hand, since the Buso River is in an area of ultrabasic bedrock and Pongani Falls is in an area of volcanic rock and soil.

Zanthoxylum novoguineense appears to be closely related to *Z. megistophyllum* (Burtt) Hartley, known from Papua and the Solomon Islands, and *Z. forbesii* Hartley, known from West Java and Sumatra. It has in common with these species a 2-carpellate gynoeceum, a 4-parted perianth and androeceum, and a similar habit. In addition, the general appearance of the branchlets, leaves, and infructescences is very similar in the three. The only other species of *Zanthoxylum* in Malesia with 2-carpellate gynoecea and 4-parted perianths and androecea, *Z. backeri* (Bakh. f.) Hartley and *Z. retroflexum* Hartley, are climbers with retrorse prickles and are obviously not closely related to the three species in question.

The distant geographic isolation of *Zanthoxylum forbesii* from *Z. novoguineense* and *Z. megistophyllum* (see MAP 1¹) may suggest to some that its apparent close relationship is only superficial. While there is no evidence that would definitely refute this, I think it is more likely that the three species share common ancestry and that the present geographic disjunction between West Java and Papua is the result of reduction in the size and continuity of intervening rain forest areas because of past climatic change. Van Steenis (1961) has put forward the idea that low ocean levels, and consequently greater land area, during glacial periods of the Pleistocene resulted in an expansion of monsoonal conditions in Malesia, especially in the regions of Central and East Java and the Lesser Sunda Islands. This is perhaps the best explanation for the discontinuity in question. On the other hand, of course, there are the possibilities that connecting populations remain to be discovered or that they have been destroyed by man's activity.

The most noticeable feature that distinguishes *Zanthoxylum novoguineense* from *Z. megistophyllum* and *Z. forbesii* is its winged leaf rachis. This and other differences between the three species are given in the following key, which also includes the changes required to accommodate *Z. novoguineense* in the key to species that was presented in my revision (pp. 175-177).

The first couplet (p. 175) should be reworded as follows:

1. Branchlets armed, the prickles mostly flattened and predominantly pseudostipular; leaf rachises usually with conspicuous wings extending to as much as 6 mm. on either side; leaves less than 30 cm. long; perianth uniseriate or irregularly biseriate, of 6-8 segments. 2.

¹ A previously unpublished station for *Zanthoxylum megistophyllum* is included here: Papua, Gulf District, junction of the Kapau and Tauri rivers, Schodde & Craven 4614 (CANB).



MAP 1. Distributions of *Zanthoxylum forbesii* Hartley (squares), *Z. megistophyllum* (Burt) Hartley (dots), and *Z. novoguineense* Hartley (triangles).

1. Branchlets armed or unarmed, the prickles terete and usually scattered; leaf rachises terete or with narrow wings extending to not more than 1 mm. on either side, *or*, if more broadly winged (to 11 mm. on either side), then the leaves more than 30 cm. long; perianth biseriate, of 4-5 sepals and 4-5 petals. 3.

The twelfth couplet (p. 176) should be reworded as follows and an additional couplet, 12a, added:

12. Leaves more than 30 cm. long; leaflets 2-5 pairs; leaf rachises winged or terete; gynoecium 2-carpellate. 12a.
 12a. Leaf rachises winged; leaflets 2-3(-4) pairs, sessile. 6a. *Z. novoguineense*.
 12a. Leaf rachises terete; leaflets 3-5 pairs, sessile or petiolulate. 13.
 13. Leaves more than 70 cm. long; leaflets 4-5 pairs, the petiolules obsolete to 5 mm. long. 6. *Z. megistophyllum*.
 13. Leaves less than 70 cm. long; leaflets 3-4 pairs, the petiolules 7-10 mm. long. 7. *Z. forbesii*.
 12. Leaves less than 40 cm. long *or* with more than 5 pairs of leaflets; leaf rachises terete; gynoecium 1-carpellate. 14.

LITERATURE CITED

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